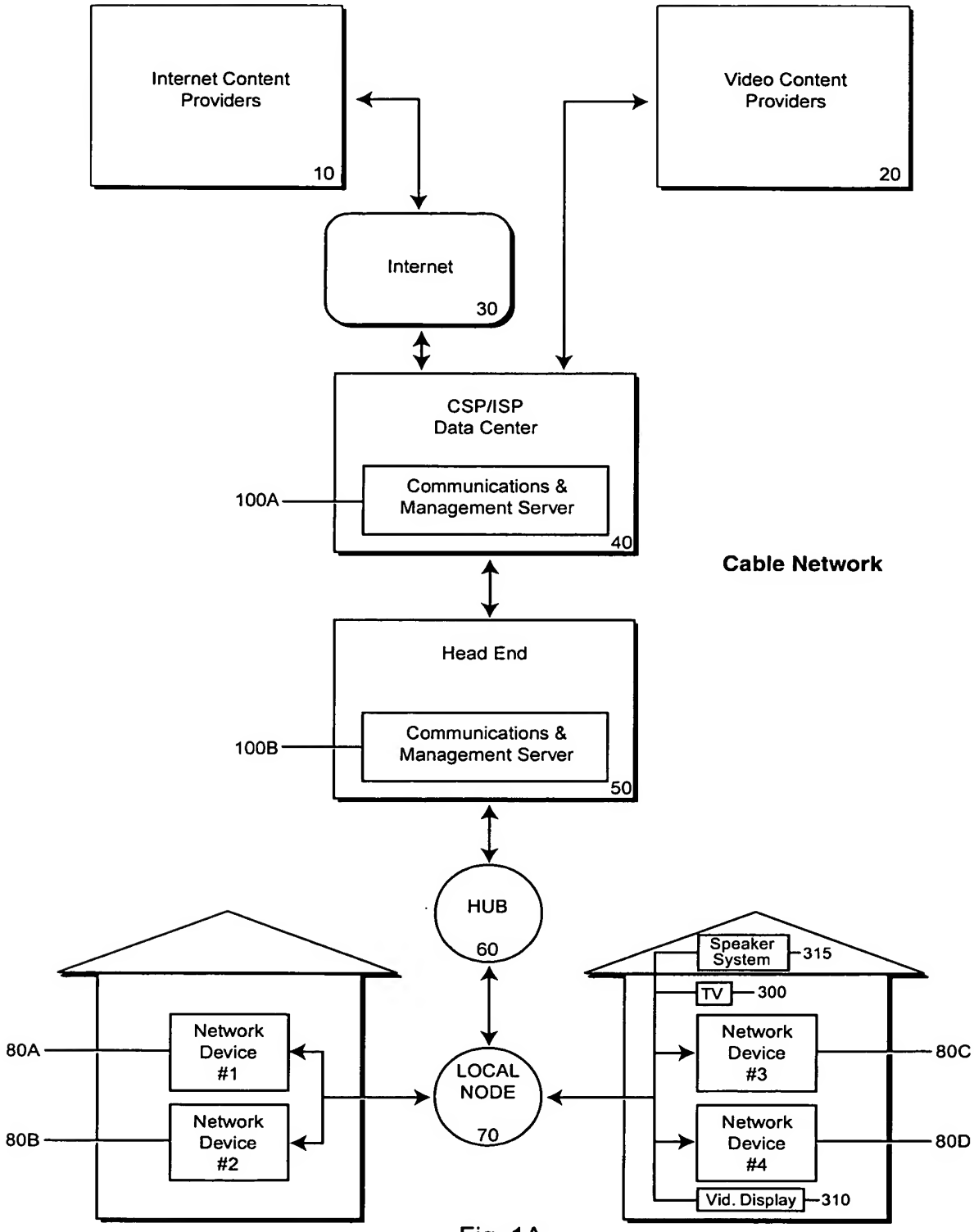
Internet Content Providers
10
Video Content Providers
20
Internet
30
CSP/ISP Data Center
100A
Communications & Management Server
40
Cable Network
Head End
100B
Communications & Management Server
50
HUB
60
Speaker System
315
TV
300
Network Device #3
80C
Network Device #4
80D
Vid. Display
310
80A
Network Device #1
80B
Network Device #2
LOCAL NODE
70

Fig. 1A

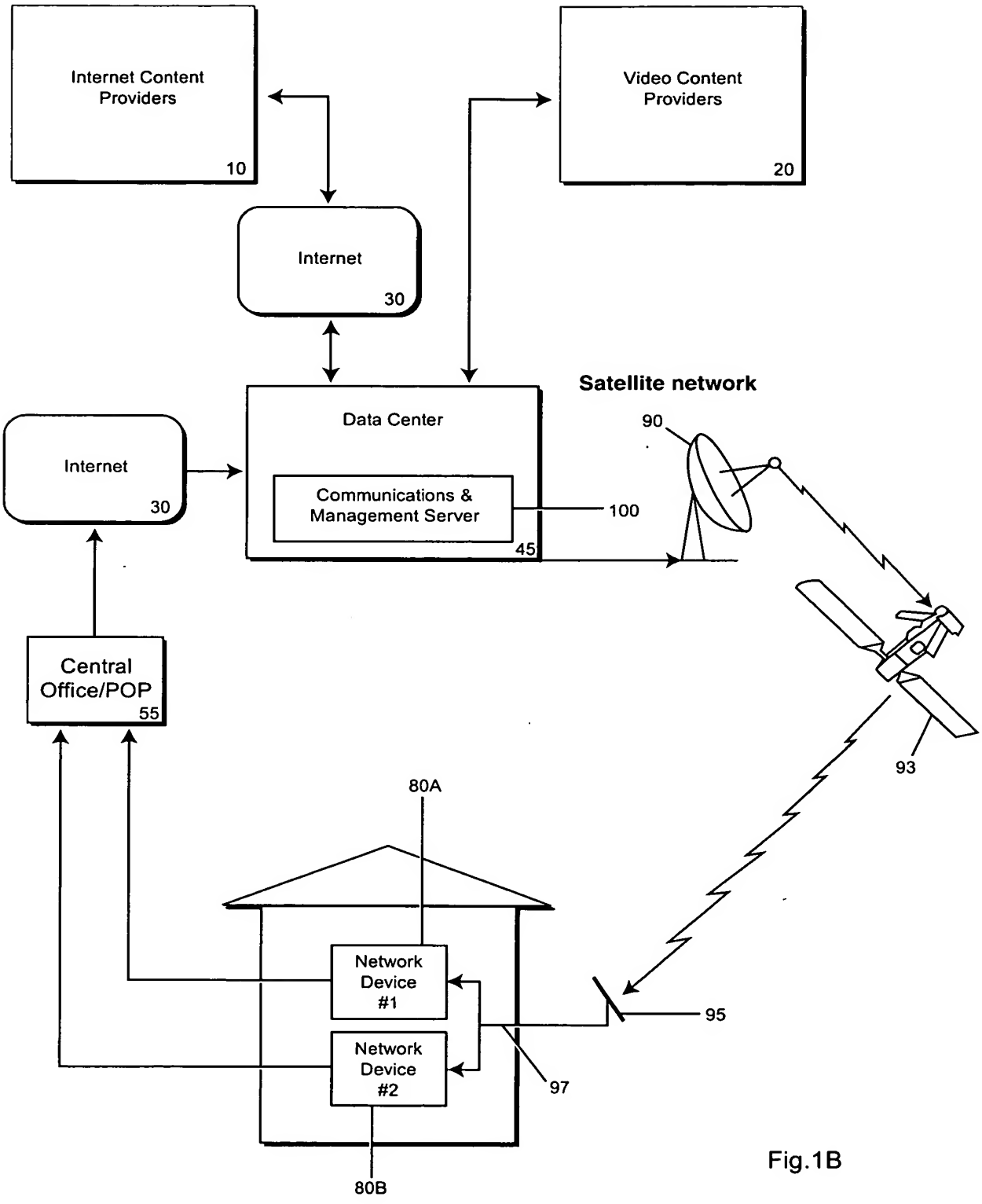
Internet Content Providers
10
Video Content Providers
20
Internet
30
Satellite network
Data Center
90
Internet
30
Communications & Management Server
100
45
Central Office/POP
55
93
80A
Network Device #1
95
Network Device #2
97
80B

Fig.1B

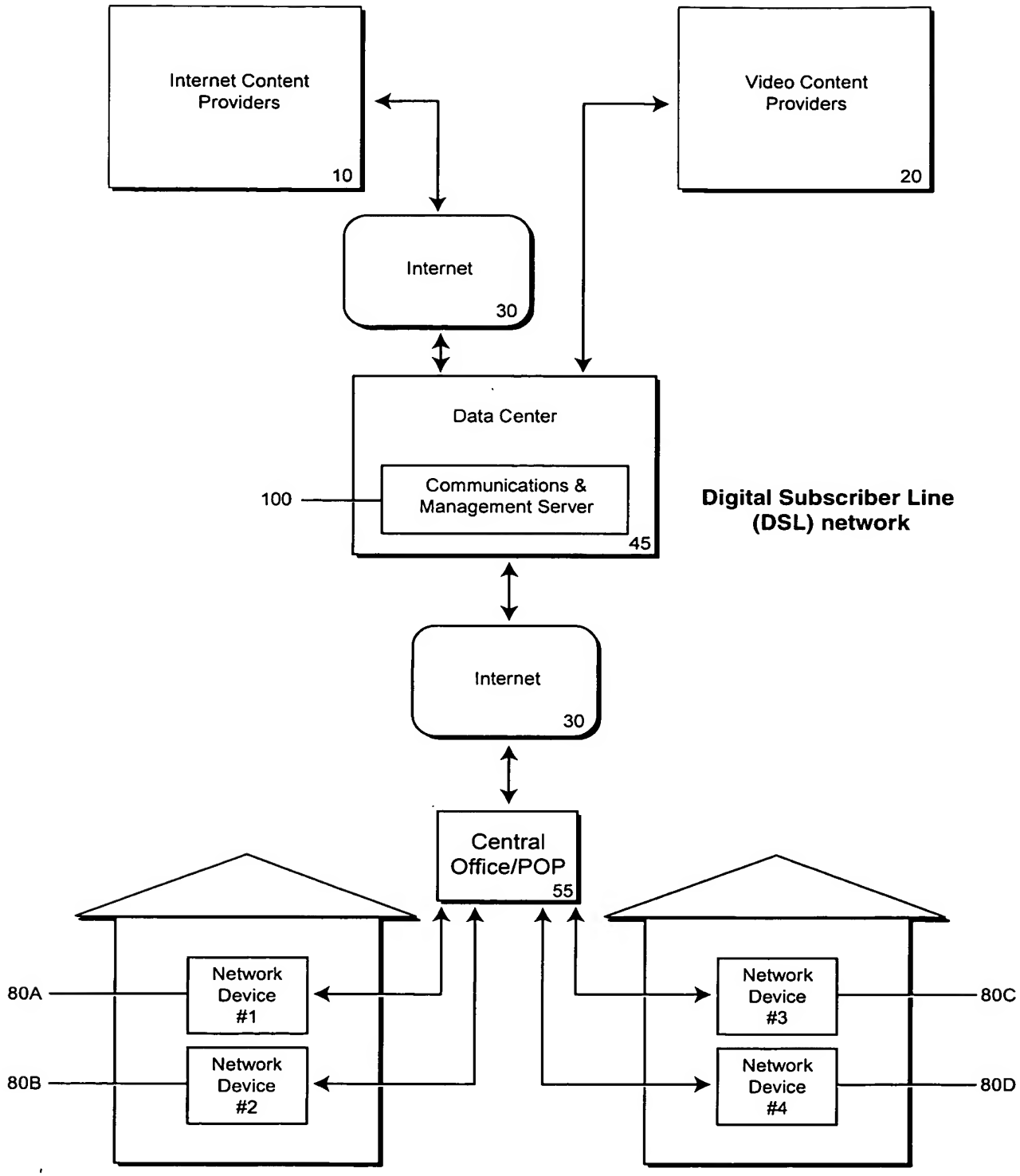
Internet Content Providers
10
Video Content Providers
20
Internet
30
Data Center
100
Communications & Management Server
45
Digital Subscriber Line (DSL) network
Internet
30
Central Office/POP
55
80A
Network Device #1
80B
Network Device #2
Network Device #3
80C
Network Device #4
80D

Fig. 1C

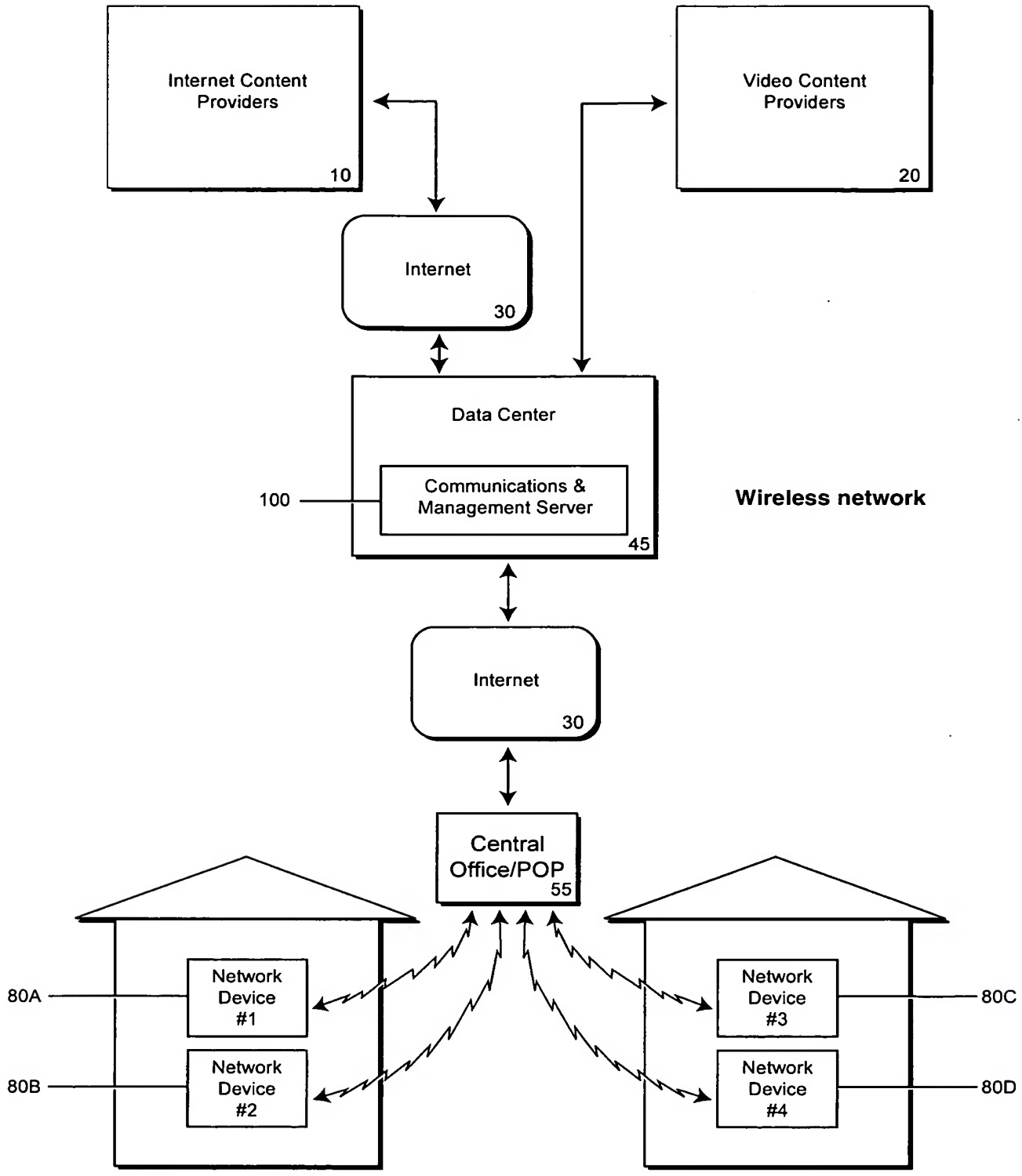
Internet Content Providers
10
Video Content Providers
20
Internet
30
Data Center
100
Communications & Management Server
45
Wireless network
Internet
30
Central Office/POP
55
80A
Network Device #1
80B
Network Device #2
Network Device #3
80C
Network Device #4
80D

Fig. 1D

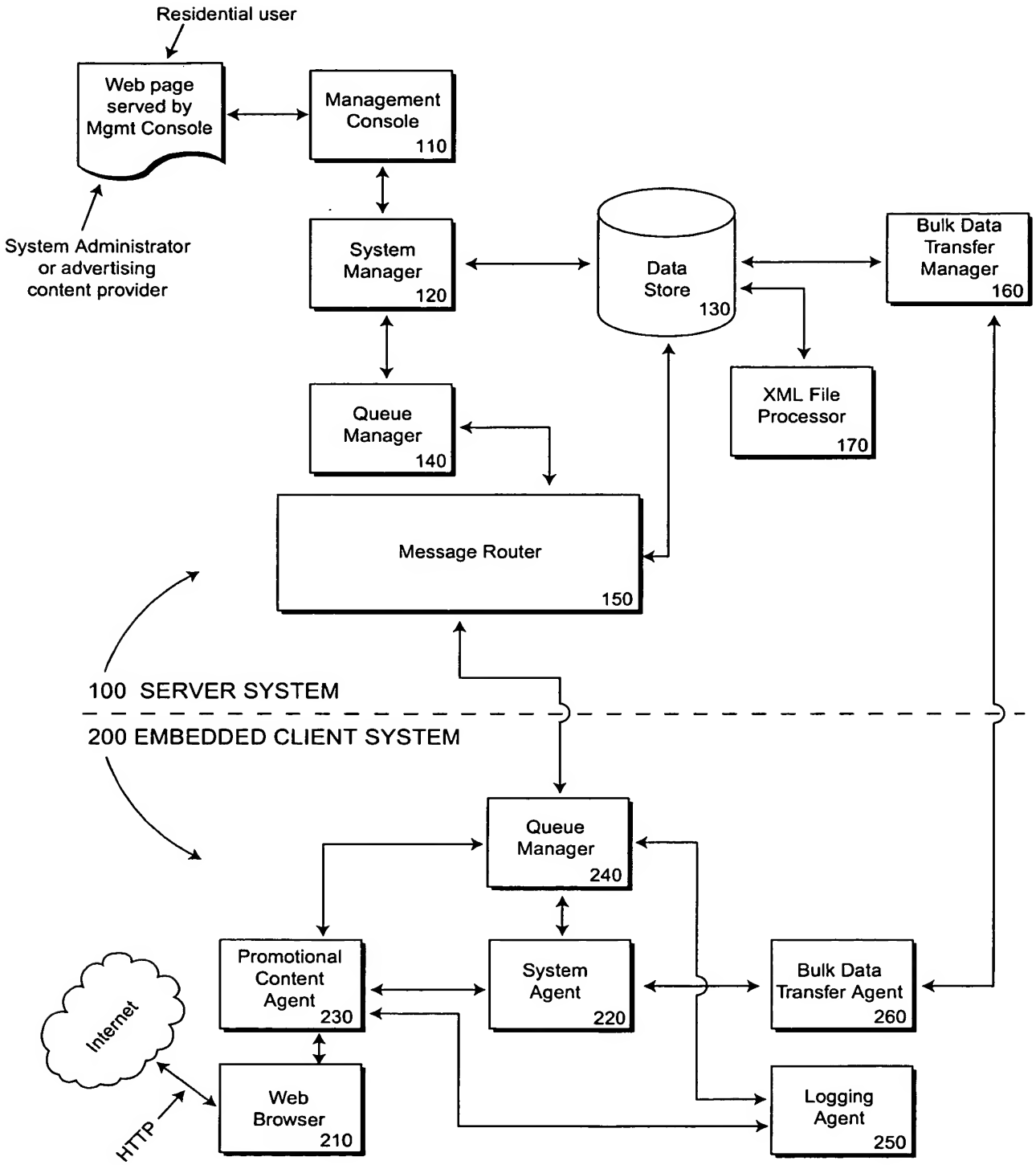
Residential user
Web page served by Mgmt Console
Management Console 110
System Administrator or advertising content provider
System Manager 120
Data Store 130
Bulk Data Transfer Manager 160
XML File Processor 170
Queue Manager 140
Message Router 150
100 SERVER SYSTEM
200 EMBEDDED CLIENT SYSTEM
Queue Manager 240
Promotional Content Agent 230
System Agent 220
Bulk Data Transfer Agent 260
Internet
Web Browser 210
HTTP
Logging Agent 250

Fig. 2A

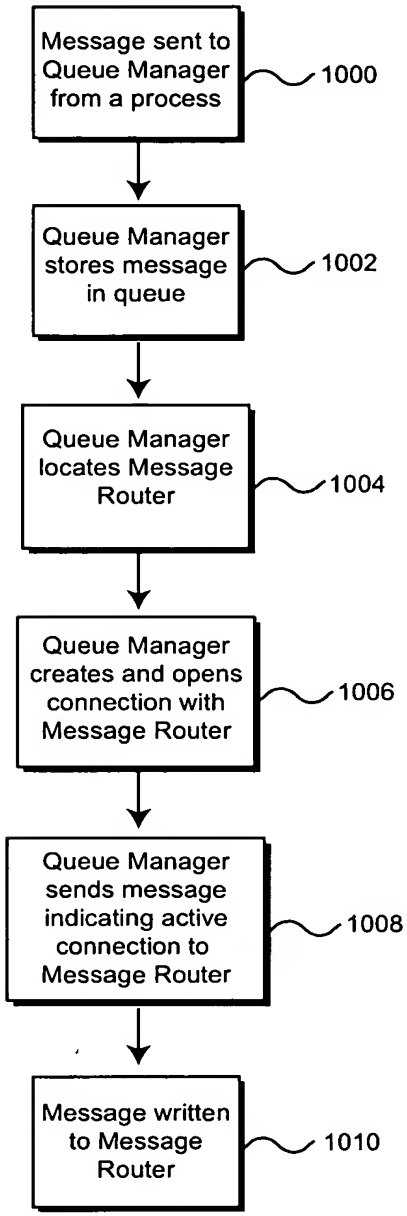
Message sent to Queue Manager from a process
1000
Queue Manager stores message in queue
1002
Queue Manager locates Message Router
1004
Queue Manager creates and opens connection with Message Router
1006
Queue Manager sends message indicating active connection to Message Router
1008
Message written to Message Router
1010

Fig.2B

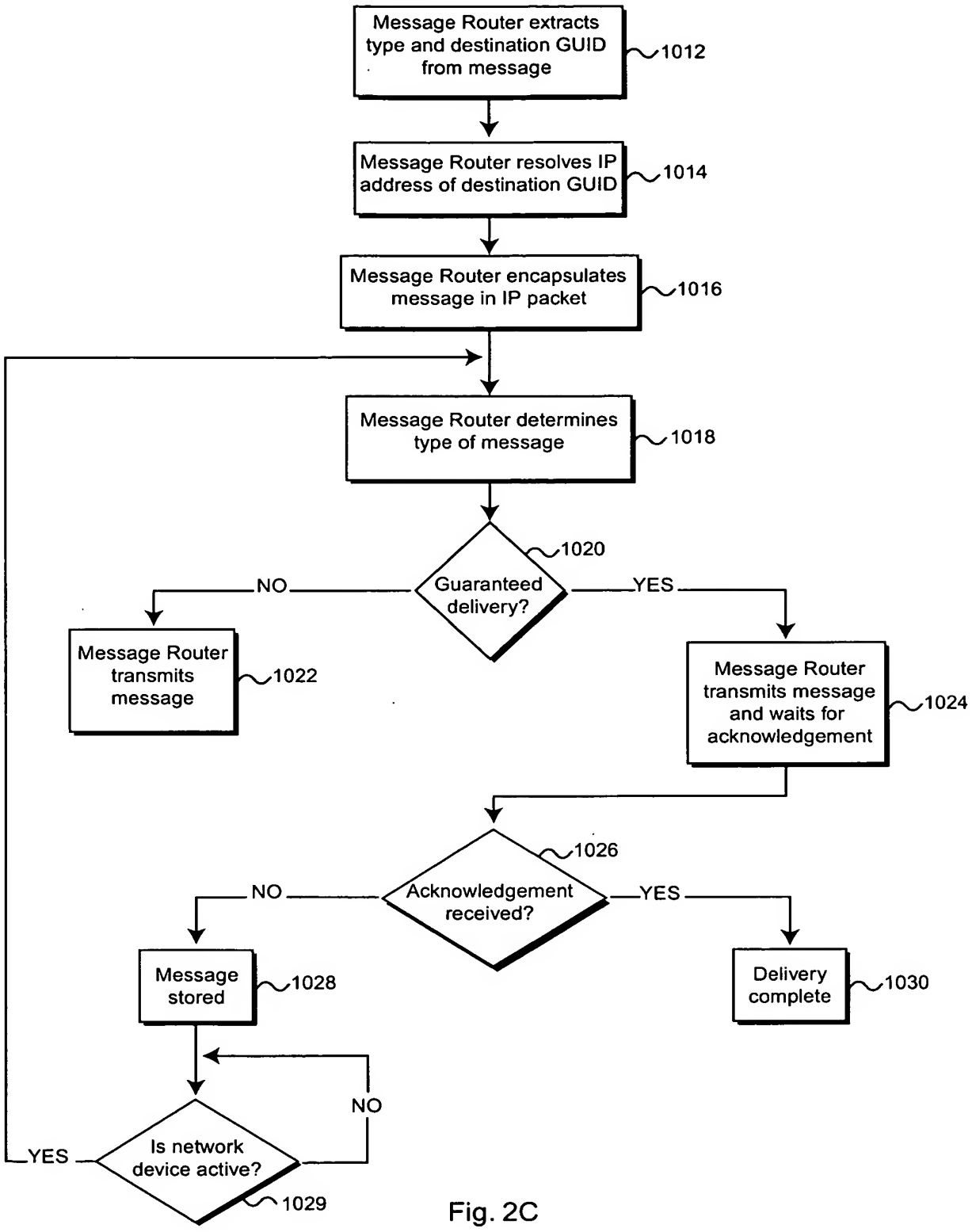
Message Router extracts type and destination GUID from message
1012
Message Router resolves IP address of destination GUID
1014
Message Router encapsulates message in IP packet
1016
Message Router determines type of message
1018
1020
Guaranteed delivery?
NO
YES
Message Router transmits message
1022
Message Router transmits message and waits for acknowledgement
1024
1026
Acknowledgement received?
NO
YES
Message stored
1028
Delivery complete
1030
NO
Is network device active?
YES
1029

Fig. 2C

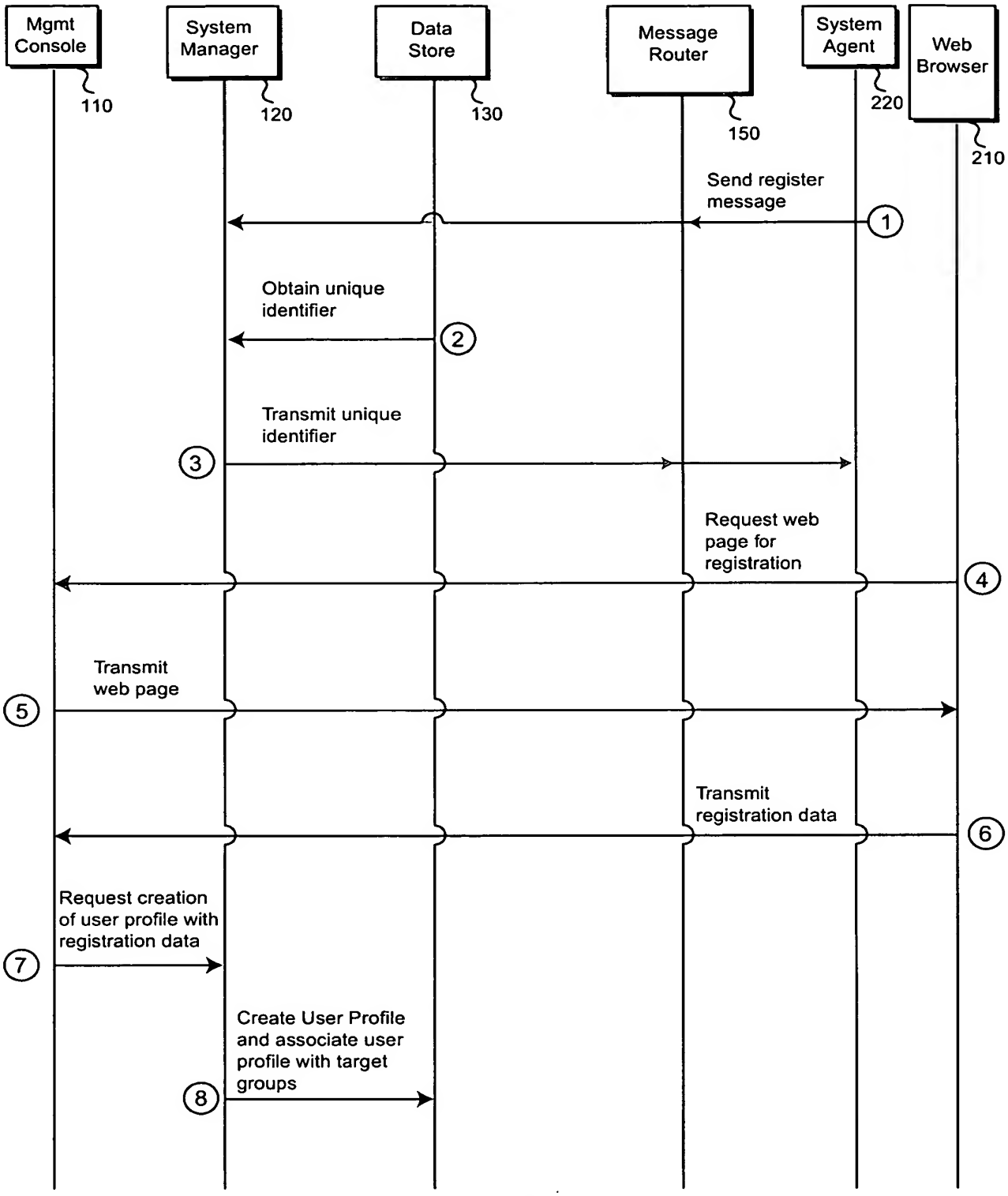
Mgmt Console
110
System Manager
120
Data Store
130
Message Router
150
System Agent
220
Web Browser
210
Send register message
1
Obtain unique identifier
2
Transmit unique identifier
3
Request web page for registration
4
Transmit web page
5
Transmit registration data
6
Request creation of user profile with registration data
7
Create User Profile and associate user profile with target groups
8

Fig. 3

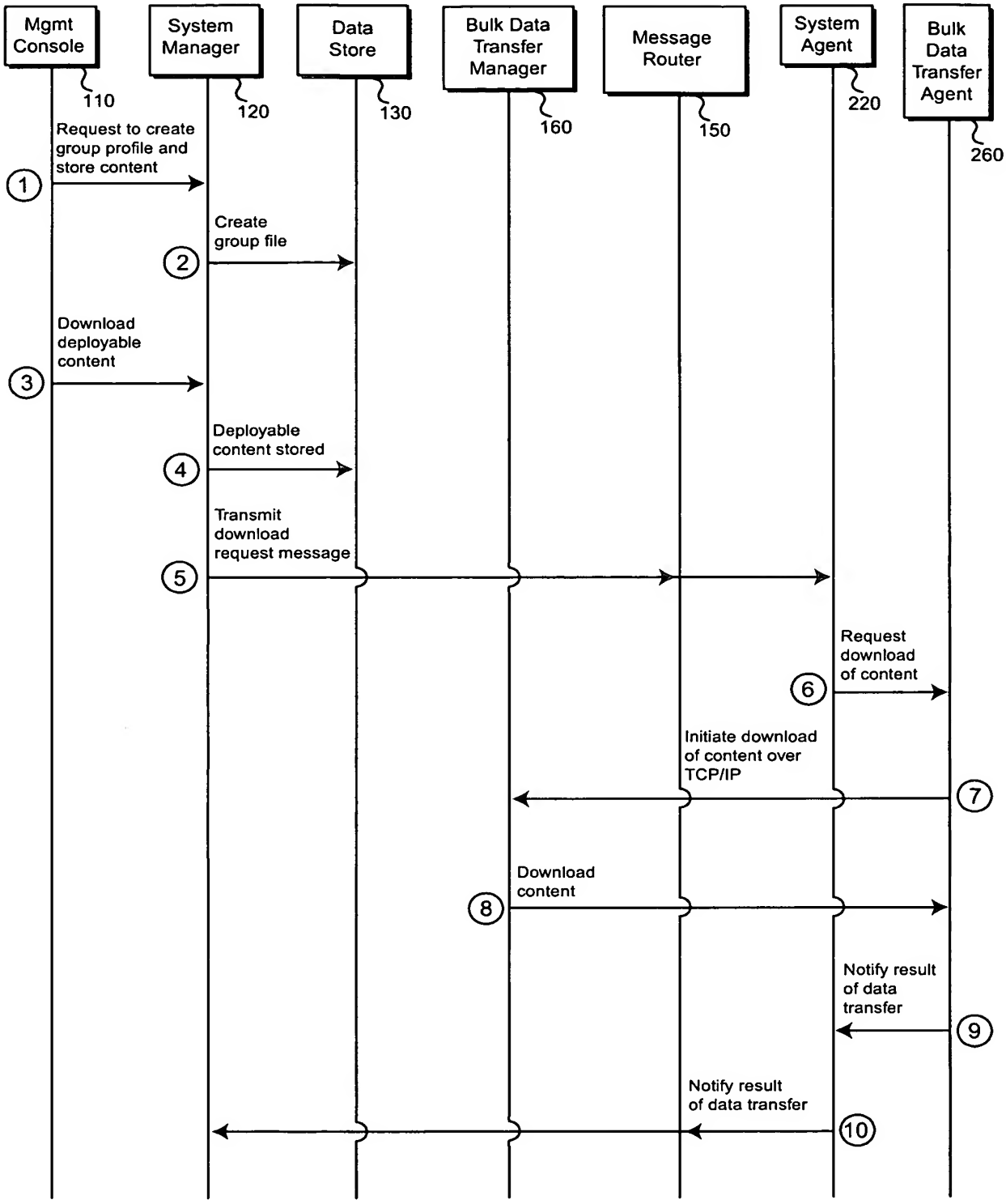
Mgmt Console
110
System Manager
120
Data Store
130
Bulk Data Transfer Manager
160
Message Router
150
System Agent
220
Bulk Data Transfer Agent
260
Request to create group profile and store content
1
Create group file
2
Download deployable content
3
Deployable content stored
4
Transmit download request message
5
Request download of content
6
Initiate download of content over TCP/IP
7
Download content
8
Notify result of data transfer
9
Notify result of data transfer
10

Fig. 4A

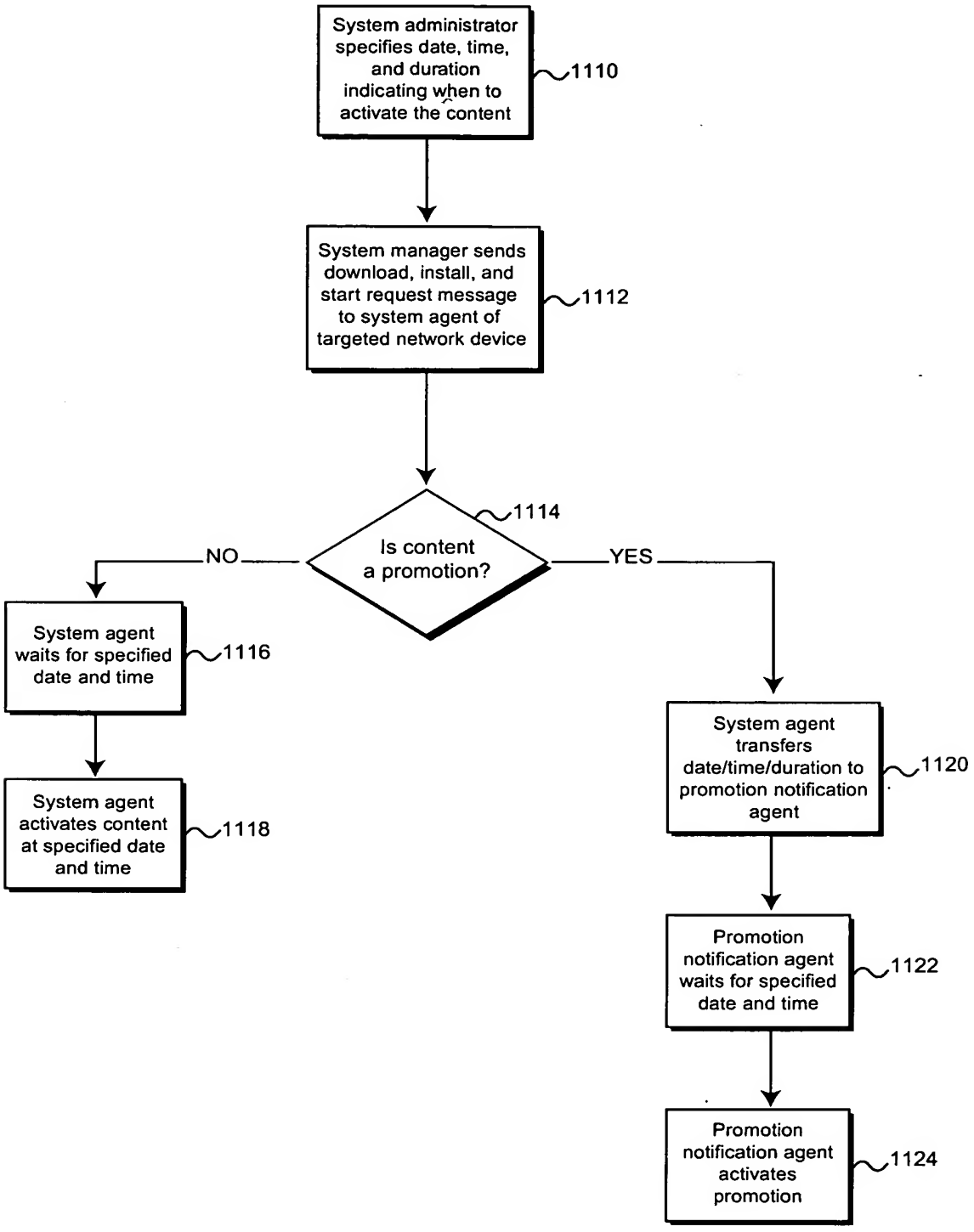
System administrator specifies date, time, and duration indicating when to activate the content
1110
System manager sends download, install, and start request message to system agent of targeted network device
1112
1114
Is content a promotion?
NO
YES
System agent waits for specified date and time
1116
System agent activates content at specified date and time
1118
System agent transfers date/time/duration to promotion notification agent
1120
Promotion notification agent waits for specified date and time
1122
Promotion notification agent activates promotion
1124

Fig. 4B

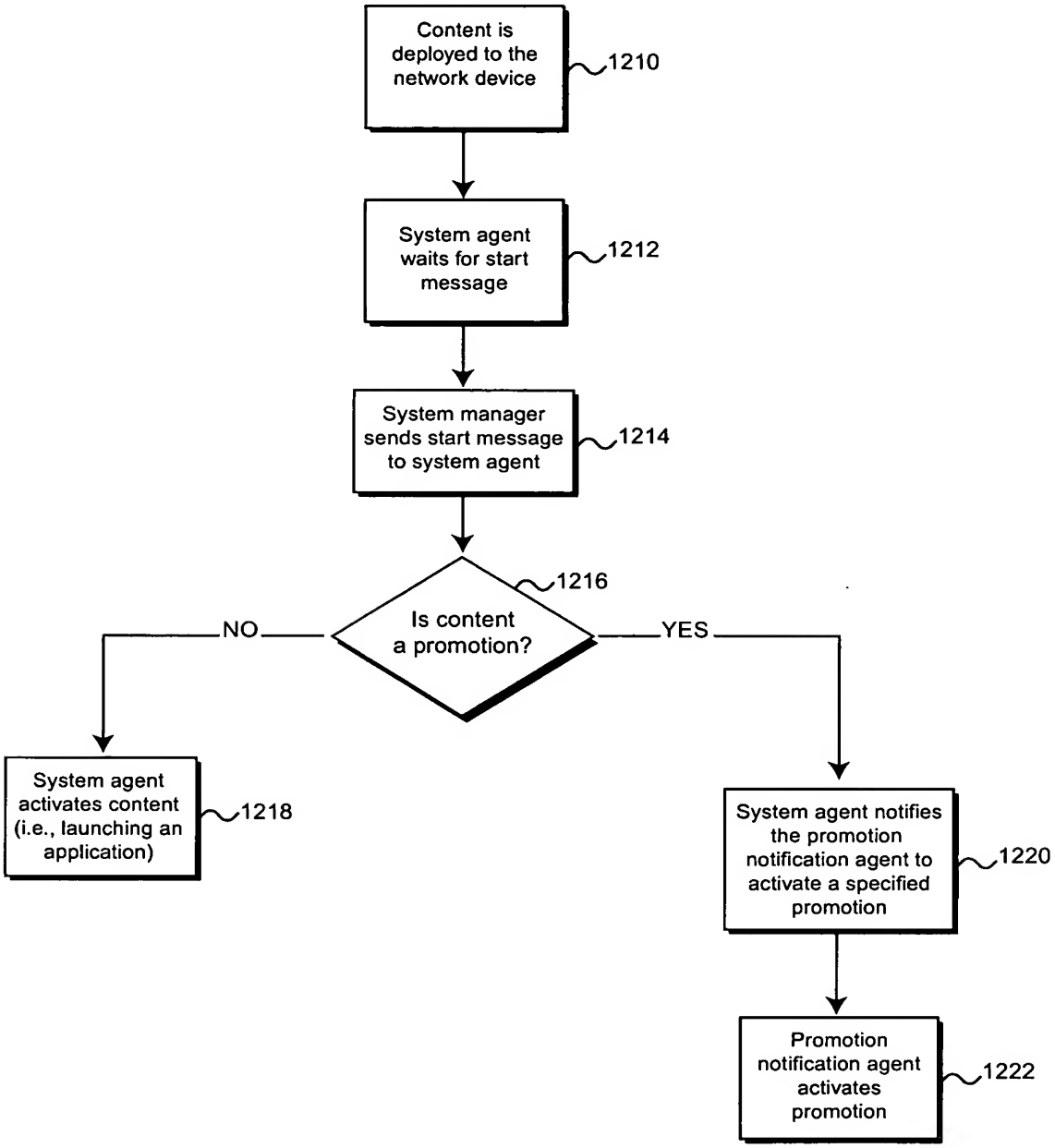
Content is deployed to the network device
1210
System agent waits for start message
1212
System manager sends start message to system agent
1214
Is content a promotion?
1216
NO
YES
System agent activates content (i.e., launching an application)
1218
System agent notifies the promotion notification agent to activate a specified promotion
1220
Promotion notification agent activates promotion
1222

Fig. 4C

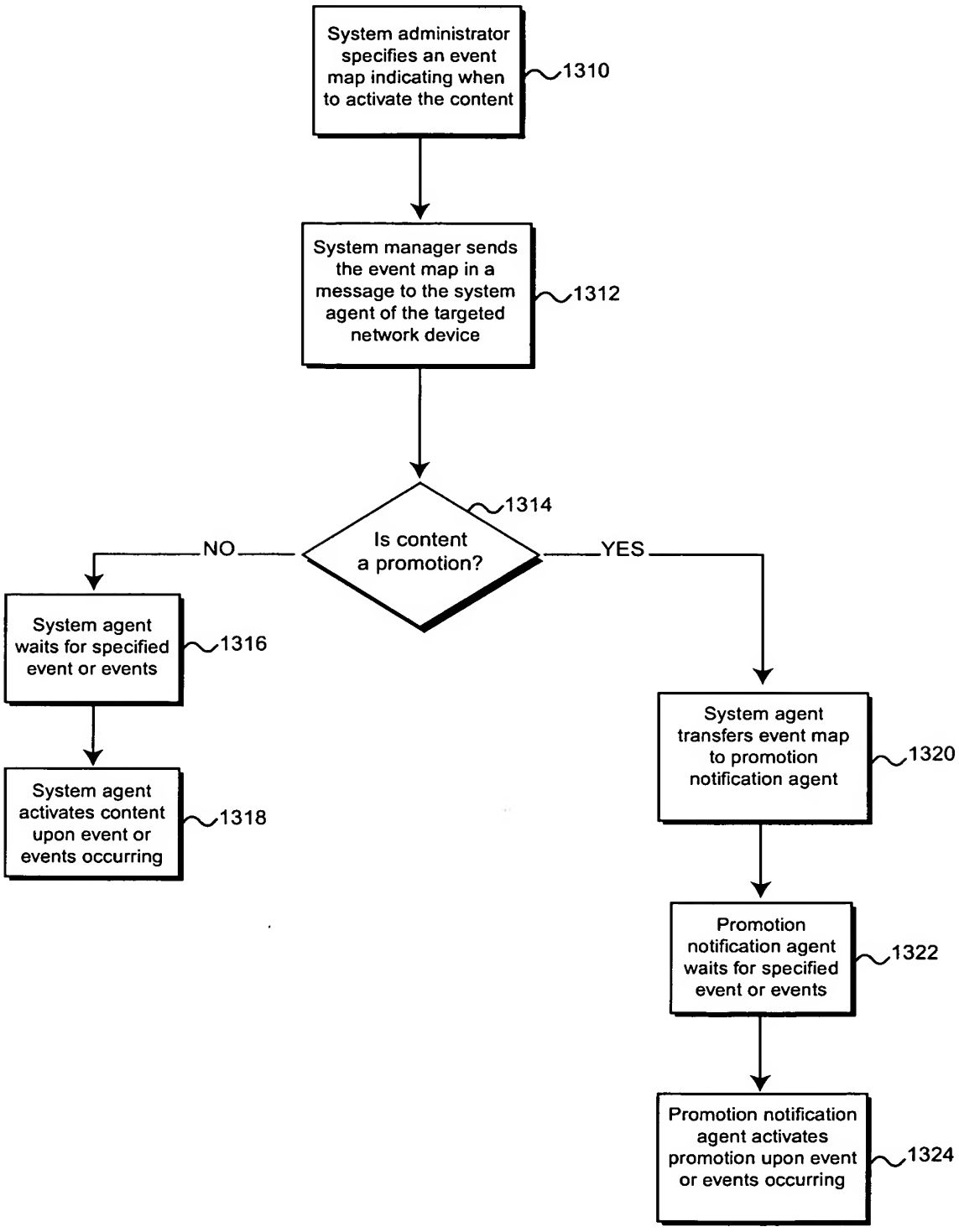
System administrator specifies an event map indicating when to activate the content
1310
System manager sends the event map in a message to the system agent of the targeted network device
1312
1314
Is content a promotion?
NO
YES
System agent waits for specified event or events
1316
System agent activates content upon event or events occurring
1318
System agent transfers event map to promotion notification agent
1320
Promotion notification agent waits for specified event or events
1322
Promotion notification agent activates promotion upon event or events occurring
1324

Fig. 4D

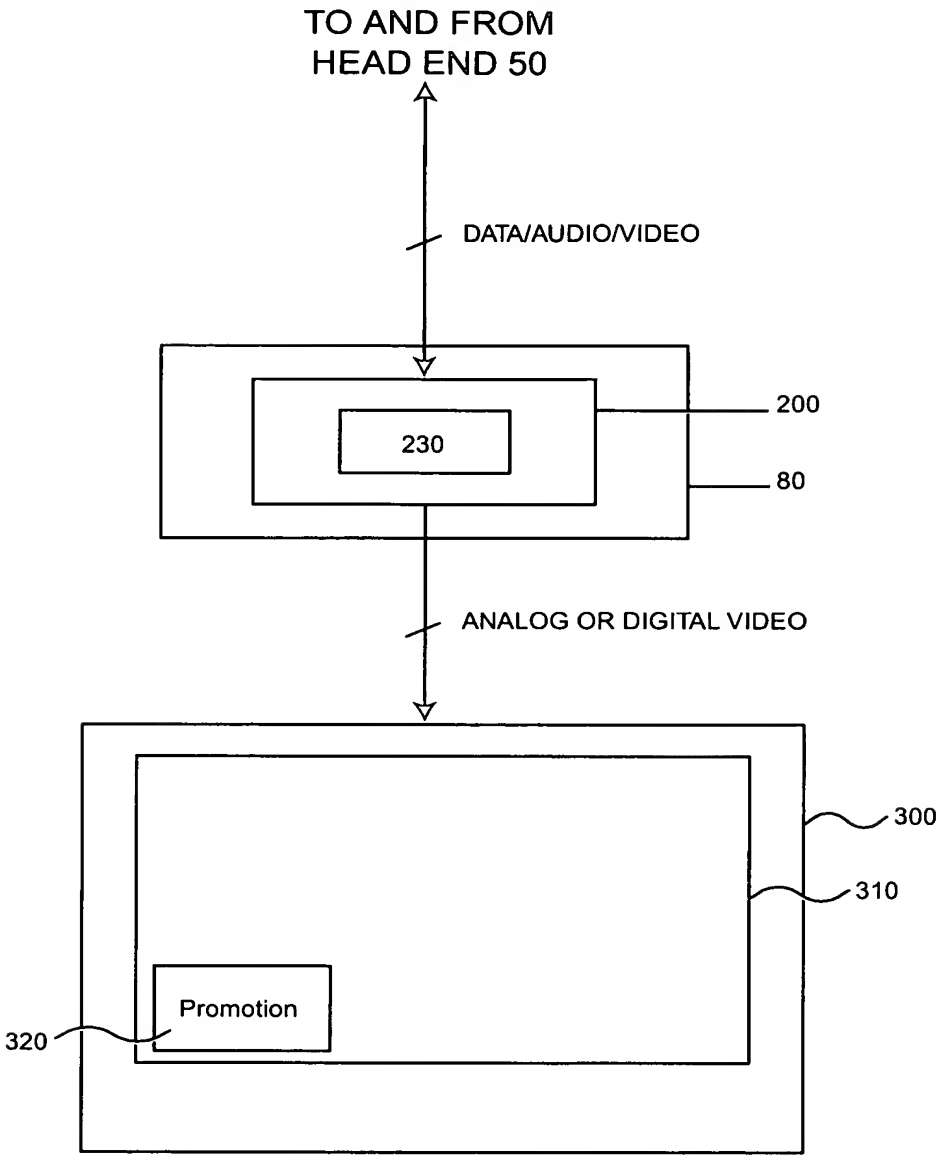
TO AND FROM
HEAD END 50
DATA/AUDIO/VIDEO
230
200
80
ANALOG OR DIGITAL VIDEO
300
310
Promotion
320

Fig. 4E

```
<?xml version="1.0" encoding="UTF-8"?>
<!ELEMENT EventLog(Event)+>
<!ELEMENT Event(gDevice, tTime, wsEventType, wsEventData)+>
<!ELEMENT gDevice(#PCDATA)>
<!ELEMENT tTime(#PCDATA)>
<!ELEMENT wsEventType(#PCDATA)>
<!ELEMENT wsEventData(#PCDATA)>
```

Fig. 5A

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE LoggerEvents SYSTEM "LoggerEvents.dtd">
<EventLog>
        <Event>
                <gDevice>E2CDBE0-6F85-11D3-BFFB-000039ABB70C</gDevice>
                <tTime>2000/02/04 18:31:02</tTime>
                <wsEventType>Channel</wsEventType>
                <wsEventData>53</wsEventData>
        </Event>

        <Event>
                <gDevice>0000000-0000-0000-0000-000039ABB70C</gDevice>
                <tTime>2000/02/03 06:31:02</tTime>
                <wsEventType>Application</wsEventType>
                <wsEventData>Launched</wsEventData>
        </Event>
</EventLog>
```

Fig. 5B

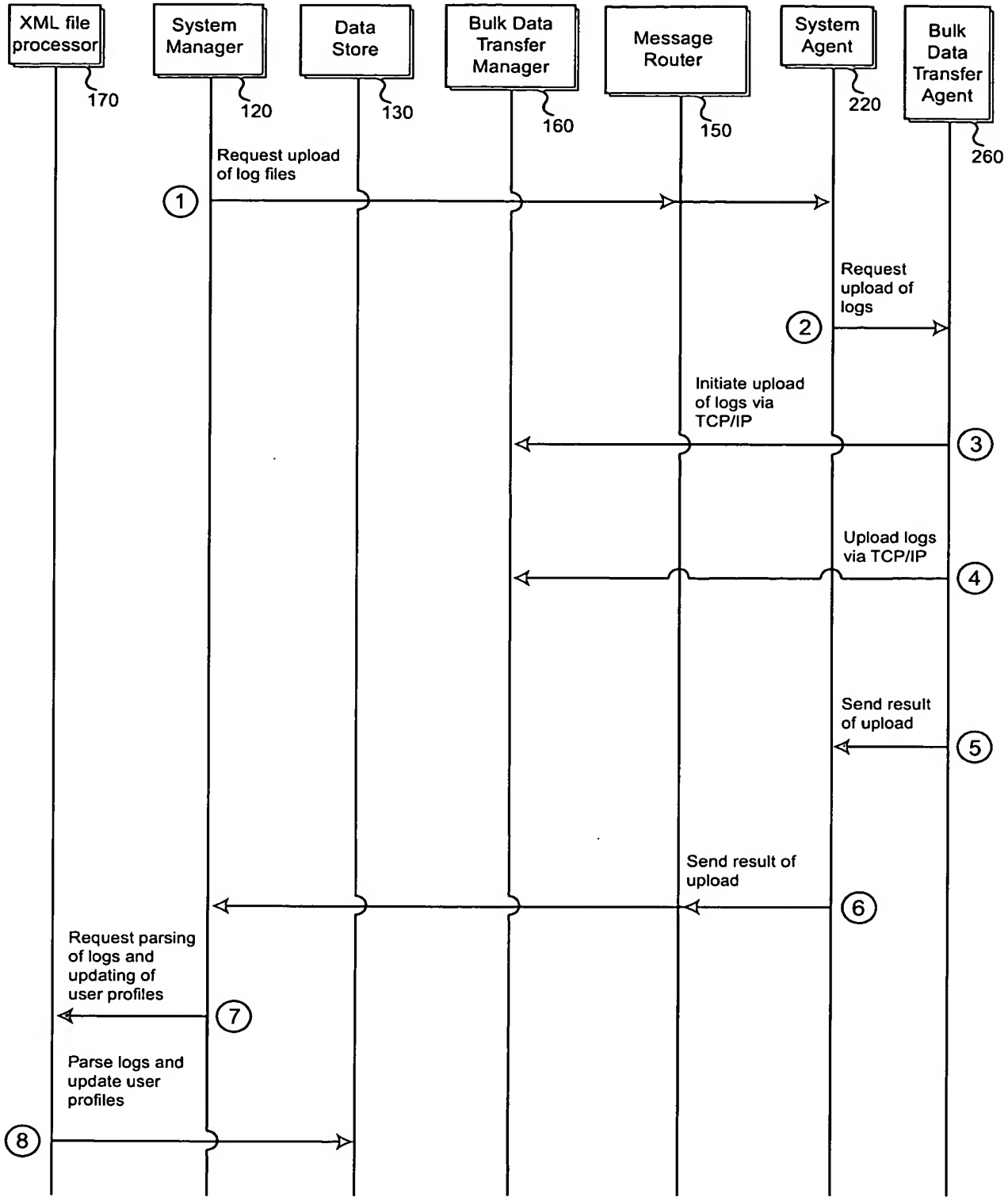
XML file processor
170
System Manager
120
Data Store
130
Bulk Data Transfer Manager
160
Message Router
150
System Agent
220
Bulk Data Transfer Agent
260
Request upload of log files
1
Request upload of logs
2
Initiate upload of logs via TCP/IP
3
Upload logs via TCP/IP
4
Send result of upload
5
Send result of upload
6
Request parsing of logs and updating of user profiles
7
Parse logs and update user profiles
8

Fig. 6

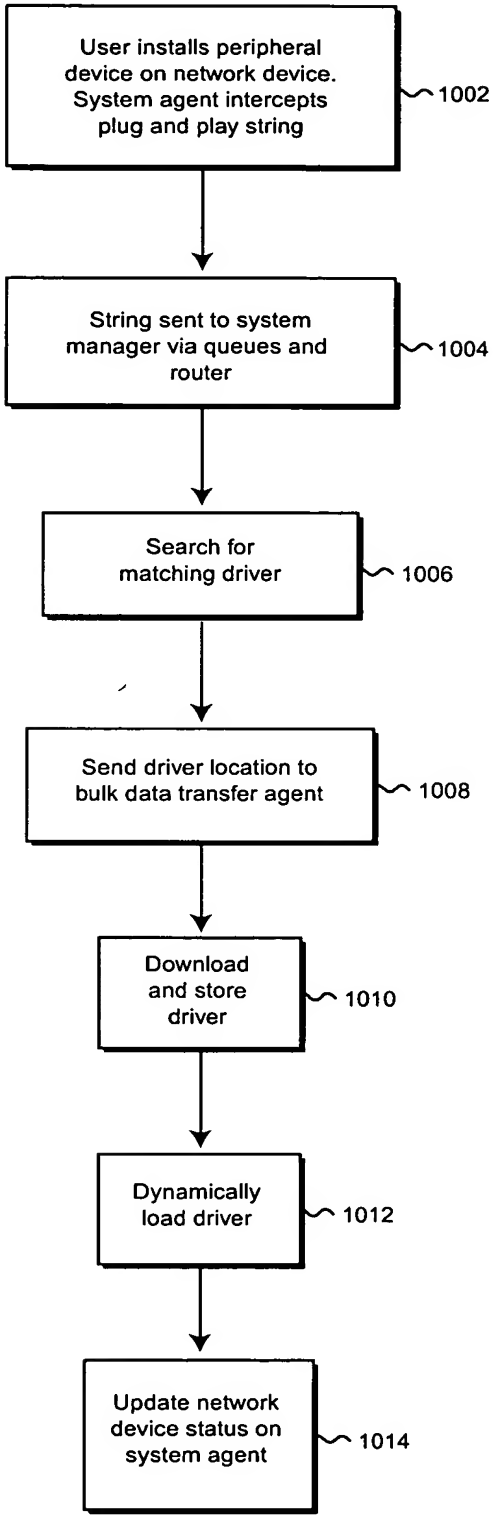
User installs peripheral device on network device. System agent intercepts plug and play string
1002
String sent to system manager via queues and router
1004
Search for matching driver
1006
Send driver location to bulk data transfer agent
1008
Download and store driver
1010
Dynamically load driver
1012
Update network device status on system agent
1014

Fig. 7

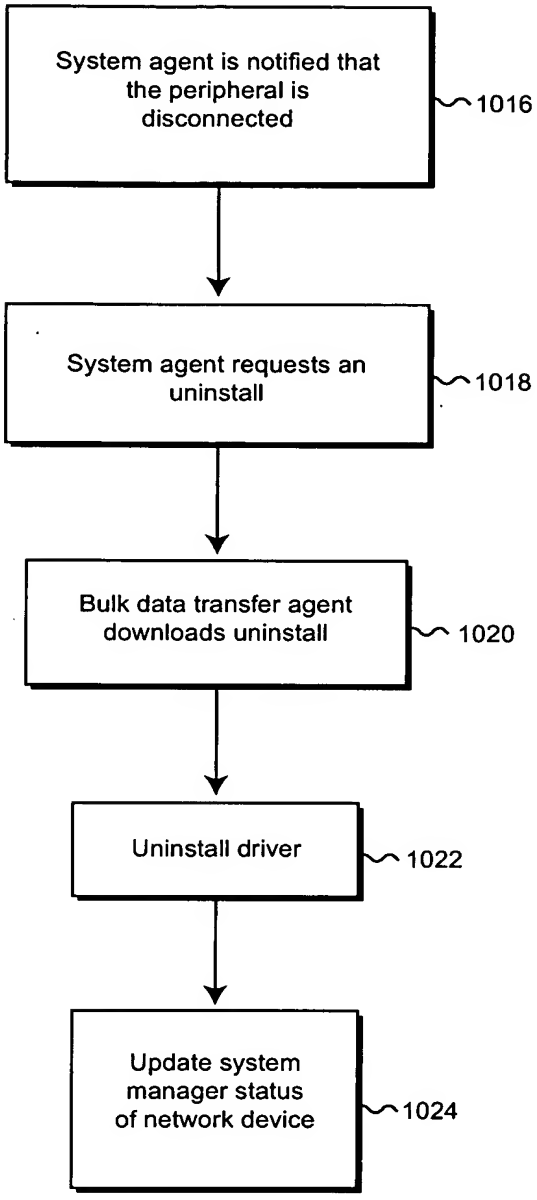
System agent is notified that the peripheral is disconnected
1016
System agent requests an uninstall
1018
Bulk data transfer agent downloads uninstall
1020
Uninstall driver
1022
Update system manager status of network device
1024

Fig. 8